

**CALIFORNIA MASTER COOPERATIVE WILDLAND FIRE MANAGEMENT AND STAFFORD  
ACT RESPONSE AGREEMENT**

**EXHIBIT D**

**Supplemental Project Plan**

MASTER COOPERATIVE WILDLAND FIRE MANAGEMENT AGREEMENT  
Forest Service Agreement # 13-FI-11052012-148; DUNS # 92-9332484  
CALFIRE no. Agreement # 7CA02025 and DUNS # 79-2358095

**PROJECT AND FINIANCIAL PLAN**

**I. INTRODUCTION**

This agreement is through the authorities of the CFMA, CAL FIRE and USFS working cooperatively in wildland fire management, planning and other national domestic incidents. This cooperative relationship improves the efficiency of these programs by facilitating the coordination and exchange of personnel, equipment, supplies, services and funds among the Agencies. CFMA authorizes the cooperative use of agency resources for the purposes of improving fire management services and activities including fire analysis/planning, community wildfire protection planning, and other beneficial efforts. Fire severity assessments are essential for analyzing fire trends and impacts within vegetation types, resource monitoring, fire and fuel modeling and land management activities in California.

This Supplemental Agreement for Cooperative use of fire severity mapping for California state and private lands, hereafter referred to as Supplemental Agreement, documents the cooperation between the parties to utilize interagency resources to map fire severity in California. Funds are accepted by the U.S. Forest Service under the authority of the Cooperative Funds Act of June 30, 1914 (16 USC 498 as amended by Public Law 104-127)

This Supplemental Agreement shall terminate upon the termination of CFMA.

**II. SCOPE AND DURATION**

This supplemental agreement will commence on April 15, 2014 and in accordance with this agreement, continue through June 30, 2016. If additional funding projects are identified, this project plan may be extended.

Under this project the USFS Remote Sensing Applications Center (RSAC) will map fire severity Rapid Assessment for Vegetation Conditions after Wildfire (RAVG) for fires between 1999 and 2015 that are on forested, but non-USFS lands in California, using available initial assessment imagery (collected within a few months of containment). RSAC will also provide the standard RAVG products which include pre/post satellite imagery and derived imagery, PDF maps and basal area loss tables by California wildlife habitat relationship (CWHR) vegetation groups. The project also includes a technical transfer/outreach component to improve CAL FIRE staff knowledge and abilities of independently

producing the RAVG product. The funding (\$47,638) will be provided by CAL FIRE in accordance with the attached Financial Plan.

### III. PRINCIPAL CONTACTS

Principal contacts for each Agency for the administration of the project are:

#### Principal Cooperator Contacts:

Cooperator Program Contact	Cooperator Administrative Contact
Tiffany Meyer P.O. Box 944246 Sacramento, CA 94244-2460 Telephone: 916-445-5397 FAX: 916-324-1180 Email: <a href="mailto:tiffany.meyer@fire.ca.gov">tiffany.meyer@fire.ca.gov</a>	Patti Cox P.O. Box 944246 Sacramento, CA 94244-2460 Telephone: 916-445-5555 FAX: 916-324-1180 Email: <a href="mailto:patti.cox@fire.ca.gov">patti.cox@fire.ca.gov</a>

#### Principal U.S. Forest Service Contacts:

U.S. Forest Service Program Manager Contact	U.S. Forest Service Administrative Contact
Jay D. Miller 3237 Peacekeeper Way McClellan, CA 95652 Telephone: 916-640-1063 FAX: 916-640-1090 Email: <a href="mailto:jaymiller@fs.fed.us">jaymiller@fs.fed.us</a>	Constance Zipperer 1323 Club Dr. Vallejo, CA 94592 Telephone: 707-562-9120 FAX: 707-562-9144 Email: <a href="mailto:czipperer@fs.fed.us">czipperer@fs.fed.us</a>

### IV. DETAILED PROJECT DESCRIPTION

See attached Scope of Work, Appendix A.

### V. SUPERVISION AND TECHNICAL OVERSIGHT

Supervision will be managed by the U.S. Forest Service Program Manager Contact. Technical oversight will be jointly provided by the Cooperator Program Contact and the U.S. Forest Service Program Manager Contact.

### VI. REIMBURSEMENT

- A. The U.S. Forest Service is required to issue bills for expenditures incurred under reimbursable agreements in the end of or prior to the end of each federal fiscal year. Therefore, an out-of-cycle bill may be received by CALFIRE. Overhead will not be assessed based on FS policy 1909.13-2006-1.

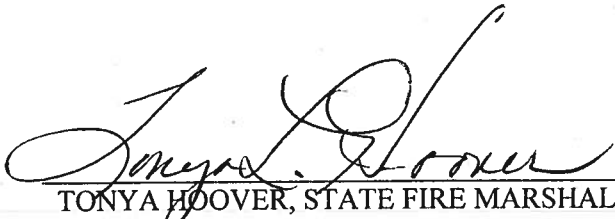
- B. If, payment is not received to the satisfaction of the U.S. Forest Service by the date specified on the Bill for Collection (Form FS-6500-89), the U.S. Forest Service shall exercise its rights regarding the collection of debts owed to the United States. Conditions specified in an associated payment bond guaranteeing payment must also be met.
- C. Premature termination: This supplemental agreement may be terminated by either the USFS or CAL FIRE program managers for any reason upon 30-days written notice or immediately upon showing a good cause. Any collected funds that are not spent under this agreement will be refunded to CAL FIRE.
- D. Purchase Assets: Any assets (such as equipment, property, or improvements) purchased by the U.S. Forest Service with CAL FIRE's contributions shall become the property of the U.S. Forest Service.
- E. Advanced Billing: The U.S. Forest Service may bill CAL FIRE prior to commencement of work for deposits sufficient to cover the estimated costs for the specific payment period. Overhead will not be assessed.
- F. Billing Method: Advance billing of up to 25% (not to exceed \$11,910) of the total agreement may be made (see Advanced Billing above). Additional billing will be based on monthly invoices.
- G. Billings must be sent to:  
Patti Cox  
CAL FIRE/FRAP  
P.O. Box 944246  
Sacramento CA 94244-2460

The payment address will be included on the invoice.

## VII. FINANCIAL PLAN

Funds from CAL FIRE will be used by the U.S. Forest Service for labor, contracts and other purchases related to this work. Reimbursement shall be made only for actual expenses incurred, not to exceed the estimated total reimbursement. Itemized documentation in support of all expenses is required.

VIII. SIGNATURES



TONYA HOOVER, STATE FIRE MARSHAL  
California Department of Forestry & Fire Protection

4/21/2014  
Date



GARY BIEHL, Assistant Director Strategic Services  
U.S. Forest Service, Pacific Southwest Region,  
Fire and Aviation Management

2 APRIL 2014  
Date

The authority and format of this instrument has been reviewed and approved for signature.



CONSTANCE ZIPPERER  
U.S. Forest Service Grants Management Specialist

26 March 2014  
Date

## Appendix A

### Statement of work

#### Background

The USFS is building a vegetation based fire severity database (RAVG), dating back to 1984. But only fires that have occurred on a specific set of federal, and a handful of private lands are mapped, leaving a large gap in the statewide database, particularly on state and private lands. The purpose of this project is to fill this data gap in California, by mapping the fire severity of all fires that burned over 1,000 acres of forested land, and not yet mapped by the USFS program. This project will use the same algorithm currently being used by the USFS, so the combination of the new and existing data will create a seamless statewide dataset.

This vegetation based fire severity data, known as RAVG, is important for tracking fire trends and impacts, developing fire and fuel modeling, evaluating wildlife habitat and aiding in analyzing fire trends and impacts within vegetation types, resource monitoring, fire and fuel modeling and land management planning in California.

This project involves several tasks. The workload will be conducted by the USDA USFS.

**TASK 0:** Quarterly project progress report provided by RSAC starting quarter 2 CY14 and invoicing/cost reporting by RSAC – due date 15 days after conclusion of each quarter. Progress reports will include a summary of tasks in progress and tasks completed, reported by task.

**Task 1:** RSAC conduct RAVG assessments for non-FS California fires burning > 1,000 forested acres not mapped from 1999 through 2013; by mapping approximately 140 fires, identified by CALFIRE and the USFS within that timeframe and fit the criteria. Assessment includes full RAVG data/product suite with basal area loss, slope and admin ownership tabular summaries using CWHR types recoded to RAVG vegetation groups. Due date 12/31/2014

**Task 2:** RSAC conduct RAVG assessments for non-FS California fires burning > 1,000 acres that have not yet been mapped from 2014 through 2015 (24 fires total). Because these fires have not yet occurred, they will be determined throughout those fire seasons, based on the forested, greater than 1,000 acres trigger and ownership. We anticipate 12 fires a season, but will adjust the budget according to how many fires occur in the given year. For example, if one year has fewer fires than 12 than the remaining money may be used to map more fires in another year. Assessment includes full RAVG data/product suite with basal area loss, slope and admin ownership tabular summaries using CWHR types recoded to RAVG vegetation groups. Due date 6/30/2016

**Task 3:** RSAC staff preparation for RAVG tech transfer activity at CALFIRE in Sacramento, CA. The outreach component involves RSAC to transfer knowledge and information regarding imagery

processing and methods used for the fire severity production to CALFIRE. This includes RSAC staff to travel and lodge in the Sacramento region and hold a workshop and presentation.

#### **Period of Performance**

This agreement will commence on April 15, 2014, and in accordance with this agreement, continue through June 30, 2016.

RSAC will deliver a quarterly progress report to CALFIRE for each task for the duration of the project.

#### **Methodology and Deliverables**

The same methods stated below will be used for both tasks 0 and 1.

1. **Acquire pre-fire and post-fire multispectral "initial assessment" imagery:** Initial assessment imagery is within a couple of months after the fire's containment. The most preferred imagery is Landsat 8, 7 or 5 for past fires, with no clouds obscuring the fires. When Landsat is either damaged or unavailable, other sources, such as SPOT 5, etc., may be used. In the case where only damaged Landsat 7 is available, focal mean processes will be applied to fill the missing data stripes with estimations of neighbor data.
2. **Preprocessing imagery and generating indices:** Images will be clipped to the FRAP fire perimeter, and images will be re-projected to Teale Albers NAD83, atmospheric, radiometric and terrain corrections applied as needed, and co-registered as needed. The Normalized Burn Ratio (NBR) will be calculated for both pre and post fire images.
3. **Produce vegetation based fire severity map, RAVG:** The Relative difference Normalized Burn Ratio (RdNBR) is then calculated, using the pre and post fire NBRs as inputs. The RdNBR has been calibrated to field based plot data called the Composite Burn Index (CBI), so that severity levels are similar across the state.
4. **Summary statistics:** Basal area loss tables by CALVEG group are generated in a GIS process by overlaying severity data with terrain slope, vegetation type and ownership and wilderness boundaries.
5. **Product review:** CAL FIRE will review the draft RAVG map products and summary tables for quality assurance before the final delivery.
6. **Final deliverable for task 0 and 1:** Deliverables will include the RAVG products (pre/post satellite imagery, derived continuous indices, derived thematic output [canopy cover loss, basal area loss, CBI burn severity], burn scar boundary shapefile, PDF map, and basal area loss table by CALVEG vegetation groups for each fire.
7. **Final deliverable for task 2:** Technical transfer of fire severity production methods, focusing on the techniques for utilizing different imagery formats, including Landsat 8 and value-added data post processing. This will include time for the USFS to conduct, and prepare information and materials for a local (Sacramento region) workshop and presentation.

**Budget and timeline details**

<b>Described Costs of the Project:</b>	<b>Schedule</b>	<b>Cost</b>
Task 0 - Quarterly project progress reports provided by RSAC starting Q2 CY14 and invoicing/cost reporting by RSAC - Due Date: Quarterly status report due 15 days after conclusion of each quarter; First report due 7/15/2014.	July 15, 2014 - June 30, 2016	\$1,440.00
Task 1 - RSAC conduct RAVG assessments for non-FS California fires burning > 1,000 forested acres that have not yet been mapped from 1999 and 2013 - 140 fires total. Assessment includes full RAVG data/product suite with basal area loss, slope and admin ownership tabular summaries using CWHR types recoded to RAVG veg groups. Due Date 12/13/2014	April 1, 2014 - December 31, 2014	\$31,922.00
Task 2 - RSAC conduct RAVG assessments for non-FS California fires burning > 1,000 forested acres that have not yet been mapped from 2014 and 2015 - 24 fires total. Assessment includes full RAVG data/product suite with basal area loss, slope and admin ownership tabular summaries using CWHR types recoded to RAVG veg groups. Due Date 6/30/2016	January 1, 2015 - December 31, 2016	\$9,538.00
Task 3.1 - RSAC staff preparation for RAVG tech transfer activity at CalFIRE in Sacramento, CA	January 1, 2015 - December 31, 2016	\$1,689.00
Task 3.2 - RSAC delivery of tech transfer at CalFIRE in Sacramento, CA	January 1, 2015 - December 31, 2016	\$1,689.00
Task 3.3 - Salt Lake City to Sacramento travel costs	January 1, 2015 - December 31, 2016	\$1,400.00
<b>TOTAL</b>		<b>\$47,678.00</b>